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BIG SMOKY  
SILVER MINING CO.

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BIG SMOKY

Silver Mining Company,

NEVADA.



JERSEY CITY:

PRINTED BY JOHN H. LYON.

1866.







BIG SMOKY  
"

Silver Mining Company,

*New York.*

NEVADA.



JERSEY CITY:

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1866.



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1866

# BIG SMOKY SILVER MINING COMPANY,

Capital Stock, . . . . \$600,000,

DIVIDED INTO 20,000 SHARERS, \$30 EACH.

WORKING CAPITAL, . . . . . \$160,000.

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SMOKY VALLEY MINING DISTRICT,

LANDER COUNTY, NEVADA.

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PRINCIPAL OFFICE:

No. 71 Broadway, New York City.

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OFFICERS:

MOSES CHAMBERLAIN, PRESIDENT.

ADON SMITH, JR., VICE PRESIDENT.

WM. H. DUDLEY, SECRETARY.

JOSEPH B. HOYT, TREASURER.

H. W. JOHNSON, ATTORNEY.

TRUSTEES:

MOSES CHAMBERLIN, . . . . . 111 WEST FORTY SECOND ST.

ADON SMITH, JR., . . . . . 10 SOUTH ST.

WM. H. DUDLEY, . . . . . 71 BROADWAY.

JOSEPH B. HOYT, . . . . . HOYT BROS., 28 SPRUCE ST.

H. W. JOHNSON, . . . . . 37 WALL ST.

A. W. BUDLONG, . . . . . WEST TWENTY-SECOND ST., N. R.

JAMES GOPSILL, . . . . . 1 EXCHANGE PLACE, JERSEY CITY.



# BIG SMOKY SILVER MINING COMPANY.

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## ORGANIZATION.

This Company was organized under the general incorporating laws of the State of New York, in accordance with the provisions of the Act, entitled "An act to authorize the formation of corporations for Manufacturing, Mining, Mechanical, or Chemical purposes," passed February 7th, 1848, with a full paid Capital Stock of \$600,000, divided into 20,000 shares of \$30 each, for the purpose of carrying on the business of Silver Mining in the State of Nevada.

## PROPERTY.

The mining property embraced in the corporation consists of the celebrated "Big Smoky Mine," situated on the east side of the mountain bordering the great Smoky Valley in Lander county, Nevada.

This mine was discovered and located on the 13th day of March, 1863, by seven persons, and contains 1400 lineal feet upon the lode, and varies in width on the out-crop of the vein from 30 to 60 feet, rising in places to the height of upwards of 20 feet, showing itself prominently the full length of the mine. It is situated in the town of Geneva, about 12 miles from the City of Austin, Reese River, and four miles from the overland mail and stage road, and telegraph line to San Francisco.

It is easy of access for any kind of freight which can be transported upon wagons, deliverable directly



upon the property of the Company, thereby possessing the advantage of quick communication and ready supplies.

The Company also own a fine timber tract of 421 acres, through which the vein runs, together with 136 acres, enclosing a water right of one mile in length with a fall of 75 feet, running upwards of 150 inches of water, mill measurement.

#### CLIMATE AND PRODUCTIONS.

The climate of Reese River is delightful, Austin lying three hundred and ninety miles west from Salt Lake City, and about one hundred miles farther south than the city of New York. Snow is rarely seen in the valleys, and the month of April generally finds but little on the mountain tops. Mining operations are carried on at all seasons alike. Rich agricultural lands are found in the valleys, once thought to be worthless, but now producing vegetables of all kinds in great abundance. Last year one thousand acres in one valley sown to barley, produced from 30 to 50 bushels per acre. As a general thing wood and water are scarce, the usual feature of a rich mineral section. About seven miles from the mill are found inexhaustable supplies of salt, which is so necessary in the reduction of silver ores, and from which the mills of Reese River are supplied. From ten to twenty per cent of salt is added to the pulverized ore before roasting, having the effect of developing through the heat, a chlorine gas, which has a strong affinity for silver, and forms after desulphurization, a chloride of silver. The base metals are thereby mostly volatilized, or driven off in a vapor, thus becoming separated from the silver, which is then readily amalgamated in the pans by the use of quicksilver.

#### PACIFIC RAIL ROAD.

The Pacific Rail Road now nearly completed into Nevada, adds a new and valuable feature to the

mining localities on its route. The Nevada mountains scaled, the level route from Austin to Virginia City, 166 miles farther east, will be but a short and easy task, but little preparation being required the full distance. The eastern end of the road now at Ft. Kearney, 800 miles from Salt Lake City, and 1190 miles from Austin, is over the great western plains a large portion of the distance, requiring but little preparation to be placed in complete running order.

The original estimate of the company to have the road fully equipped to San Francisco during the season of 1868, seems now probable, although a couple of seasons may be required for its final completion. Thus will Austin soon receive the full benefit of trade and communication, and only six days ride from the city of New York. The immense advantage of possessing property thus situated must be apparent; not only in the safety and security of the property itself from depredations and accidents, incident to a new section, but in being under the immediate control of the shareholders, and where daily and immediate information can be obtained of the progress and prosperity of the company's operations.

#### TITLE TO THE PROPERTY.

The discovery and location of this mine was made previous to that of any other mine in the district, lying upon the eastern side and slope of the mountains bordering Smoky Valley, and was also the first choice of location upon the Big Smoky Lode; consequently it holds a priority of right over all other mining interests in its vicinity, and there can therefore never be any dispute or cloud upon its title, which was obtained in accordance with the district and state laws, and by virtue of which the owners have always held a full and quiet possession of it. The same title possessed by the original company has been transferred to the Big Smoky Company, whose Agent and Superintendent is now in full possession of the mine.

## DEVELOPMENT OF THE MINE.

The mine was at first developed somewhat slowly ; but by the aid of capital, during the last year the opening of the vein has been completed, with such results as to prove that there is probably no more valuable mine on the Pacific coast ; and that it is worthy of being called as Mr. Walter W. Palmer, the former superintendent of the great Ophir mine terms it, "the King Mine of the Pacific coast."

The most important work of the company is their last tunnel 342 feet in length, which pierces the lode at a depth of 148 feet from the surface. The lode at this point is 28 feet in thickness, and has beautiful and well defined walls, with six inches of clay lying upon each side of the vein, proving conclusively that it is a true fissure vein, and an original and primitive formation.

Its richest pay streak is ten feet thick, and upwards of 200 tons of ore is now lying at the mouth of the tunnel, ready for the machinery to extract the precious metal. The Everett Company adjoining, towards the valley, have an incline by which they are working their mine, about 75 feet from the Big Smoky Company's line, and about 300 feet from their tunnel. The vein where pierced by them in two different places is 34 feet in thickness, and after striking water they found the ores rich in gold as well as silver.

The present tunnel of the Company has pierced the vein above water, consequently its richest ores are yet to be disclosed by deeper developments of the mine.

A new surveyed tunnel, commencing a short distance from the bank of the stream, and running a distance of about 1200 feet, strikes the vein 566 feet below the surface. When the very steep ascent of the vein up the side of the mountain is taken into consideration, giving an average of upwards of 600 feet in height of the vein above the proposed tunnel, abun-



dantly draining the whole mine above it, some estimate can be formed of its true value and capacity for producing ore for a long period of time. 20 cubic feet of ore being required for a ton's weight,\* we have an aggregate amount of over 400,000 tons to be extracted from this channel of 10 feet. The average width of the vein may safely be placed at 30 feet, which will give a total of about a million and a quarter of tons of ore to be extracted from the full width of the vein or channel of 30 feet. By the aid of machinery for draining and hoisting, at least 1200 feet of perpendicular vein, (the same depth attained in the Hayward Mine, Cal.) may be easily taken from below the tunnel, giving upwards of 1600 feet of perpendicular vein matter of sulphuret ore, or a total production of 5,000,000 tons.

#### VALUE OF THE ORES.

The value of these ores as taken from the present tunnel, show an average assay of \$235 per ton, from the 10 feet portion of the mine, being its best ore. This result was from the average mass of crushed ore at the mill, after it was prepared for amalgamating. These figures and results are taken from the old Company's records of July 1865, in which month the opening of the mine was completed and the ore worked at the Butte Quartz mill near Austin City.†

The gross proceeds of this crushing (two tons of average ore), was \$96 per ton, being less than half the silver contained in the ore. This result was attributed by the superintendent of the mill, to his being unacquainted with the peculiar nature of the ore before working it, zinc being found in combination with the other metals, which though easily worked when understood, required a different treatment which this working had developed. He proposed to work the rock at another trial to within twenty per cent. of the fire

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\* Miners estimate 16 solid cubic feet before extracting, or 20 cubic feet measured in the cord, a cord weighing 8 tons.

† See statement of Mr. Morris, President Butte Mill.

assay, obtaining thereby \$188 per ton. The Company feeling confident of realizing at least \$100 per ton by a proper selection of their ores as the lowest possible result, decided to erect a mill of their own upon the mine, thereby saving the enormous expense of \$75 per ton charged by the mill for working their rock. The actual cost of working these ores will not vary much from \$20 per ton, the roasting process being a heavy item of the expense.

In comparing the value of these ores, attention might be called to the quarterly report of the Gould & Curry Company, ending March 31st, 1865, as required by the laws of Nevada, and which give as their production, "9,041 tons, yielding \$477,183.98, being an average of \$52.78 per ton," and costing an average of about \$12 per ton for working.\*

It may be a matter of interest to present a comparison between the large and small class of mineral veins of Nevada, as proved by the actual production in bullion; the statements being obtained from the books of the Assessors of the two sections represented, ending January 1st, 1866.

The six companies situated upon the Comstock Lode, and lying within the city limits of Virginia City, produced in the third quarter of 1865, \$7,168,000, being \$14,336,000 for the six months ending January 1st, 1866. The ores producing this result yielded about \$40 per ton, one half being profit. During the same period there was produced from the Reese River Mines, (57 in number), \$364,453, the ores averaging \$150 41 per ton. This result shows a comparison of \$2,389,333, to each company upon the large vein, to \$6,393, from each of the small ones. This difference is due to the enormous "quantity" of ore produced in the one, and the small amount in the other.

The Hayward mine of California is now paying

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\* See list of Washoe Mines.

\$35,000 monthly to its owners, in gold ; a profit equal to 24 per cent. upon a cash capital in gold coin of \$1,750,000. This mine is now worked from a depth of 1200 feet, the vein being 25 feet in thickness, and from which 100 tons of ore are produced daily, yielding an average profit of \$15 per ton.

From San Francisco advices of the 9th of July, 1866, we note that the yield of the mines was never better. The receipts of the past month of June, in bullion, gives the Hale & Norcross Mine, \$100,000 ; Savage Mine, \$130,000 ; Crown Point Mine, \$105,000 ; Gould & Curry Mine, \$146,000 ; Imperial Mine, \$61,000 ; Yellow Jacket Mine, \$260,000.

Companies possessing such vast bodies of ore, which can be worked at even a very small profit, can always realize enormous dividends, and with a certainty of continuance.

This important feature of mining is presented as the great and general characteristics of all mining countries, not simply in our own states and territories, but in all parts of the globe, the same general principles bringing like results.

The profits of mining are not so much the result of very rich ores, as upon the great and "permanent supply," which pays a comparatively moderate profit. This is a fact worthy of consideration in connection with the mining interest, and may be considered one of the principal reasons of the many failures of mining companies.

With a constant working of twenty tons of ore per day, it is believed that the stockholders of the Big Smoky will realize monthly dividends, aggregating yearly the capital stock of the company. No calculations have been made thus far upon the water or sulphuret ores of the mine found below the water level,\* and which are universally estimated by the

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\*The term "water level," refers to the point in the vein where the water is first encountered permanently, requiring thereafter a continual drainage of the mine in the extraction of its ores. The ores taken out of this water are



mining and mill men of Reese River, to contain more than double the amount of silver, than is found above this point while in a chloride or antimonial state.

#### SUPERINTENDENT.

The Company have secured the services of Mr. Gorham H. Moore, of Austin City, who spent about three months of the present year in New York, where his acquaintance was first made by the trustees. Mr. Moore was among the early pioneers of California, having been a resident on the Pacific coast since 1850, and for the last five years has been a resident of Nevada, and directly interested in the extensive mining and milling interests of the Comstock Mines. He was intimately known by the secretary during his residence in Nevada, and it is but just to say, that great satisfaction is felt by the Company in having secured his services, not more for his abundant capabilities of filling the position than, for his sterling integrity of character. Success and sound judgment have been prominent features of Mr. Moore's life on the Pacific coast, ; and his predilections for this particular mine since its first discovery, a fact well known to his friends at Austin, explains the reason of his accepting the position, and serves to inspire additional confidence in its future prosperity.

#### THE MILL.

The Company have made arrangements for a first class 20 stamp Quartz Mill with Mr. Cyrus Palmer, of the Miners Foundry, San Francisco. Mr. Palmer's attention has been exclusively devoted to the building of

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called "Sulphuret Ores." The Big Smoky mine will have 400 feet of this class of ore above the new tunnel, and drained by it ; and can easily reach a farther depth of 1200 feet below this point, by the use of machinery for hoisting and draining, acquiring thereby the same depth attained as in the Hayward mine, which recently sold, according to report, for nearly \$2,000,000 in gold.

quartz machinery for fourteen years, and his practical knowledge and long experience in this particular branch, enables him to furnish the splendid machinery which his establishment produces, and which has given such universal satisfaction. The twelve to sixteen years of experience of the foundries of the Pacific coast, which have made quartz-milling machinery a speciality for most of the time, enables them to furnish superior machinery for practical mining purposes. Another advantage lies in the fact, of being able to obtain duplicate machinery in case of any accident to the mill. An hour's ride of the Superintendent, from the mill to Austin, places him in telegraphic communication with the foundry, and three days by express, places the new machinery in his possession. No "new processes," or "new crushers," not in general use among the mill men of Nevada, will be adopted to ruin the prospects of the Company. New crushing inventions are not required in making mining successful, the present cost by a stamp battery being only about three dollars per ton; a machine so simple in its construction as to be within easy control of ordinary laborers, and not liable to get out of order.

The great secret so much desired, and of such immense value in quartz mining, is in bringing to light some new and "practical method" of saving the metal after the ore is pulverized; the loss here generally ranging between 20 and 40 per cent of the fire assay. The methods now in use among the mill men in Nevada, are the only methods which are safe for practical use. The mill men of Washoe, especially those who are directly interested in the Comstock mines, (the majority of whom have also had many years of experience in California mining,) naturally pursue such a course as secures to themselves the greatest amount of profit on their investments; especially after having spent immense sums in experimenting upon new theories and processes. The present course pursued by them is the result of daily experience among each other.

The Big Smoky Mill will have twenty stamps of 800 lbs weight each, the four mortars for the stamps weighing 3700 lbs each. Two fan-blowers in front of the mortars will keep the screens free from the pulverized ore. Twelve Wheeler pans will be put into the mill, eight for regular use, and four for reserve and for a longer amalgamation of a high grade of selected ores. A sixty horse power engine, with two sets of tubular boilers for alternate use 45 x 16, will be used to obviate any delay in running the mill which might occur by breaking, cleaning, or otherwise. The roasting furnaces will be ample for roasting twenty tons per day. The ore will be run from the mine directly into the mill, which will be situated only a few hundred feet from the mouth of the new tunnel, the advantages of which will be readily appreciated.

#### SALE OF ORES.

Another feature of revenue to the Company, lies in their ability of supplying large quantities of ore to mill and mining companies, there being many such opportunities, caused by various reasons, being more especially the case with companies possessing narrow veins, causing them for the time being to seek supplies from other sources than their own. The Company have already opportunites of thus furnishing supplies on long contracts, receiving a share of the gross receipts in bullion. They will endeavor to induce around them from time to time as many companies as they may be able to supply. They will also afford most excellent opportunities for individual enterprises in building mills, wholly disconnected from mining lodes of their own, but based upon contracts with the Company for a supply of ores to be worked upon shares, giving a sure and remunerative return to both parties. The company will be able to supply from one to two hundred tons of ore daily as soon as sufficient room can be made in the mine for the employment of the workmen required.



## REPORT OF JOHN S. MORRIS, ESQ.

CORTLANDT STREET HOTEL, N. Y., Feb. 13, 1866.

*To the Big Smoky Silver Mining Co., N. Y. :*

GENTLEMEN—By request of your Secretary, I take pleasure in making a statement relative to the working of the Big Smoky Company's ores at the Butte Mill, near Austin, Reese River, of which at that time I had the honor of being President.

There were two tons of the ore worked at our mill, which were delivered there by the company then working the mine, known as the Smoky Valley Gold and Silver Mining Co., and which was brought for the purpose of ascertaining the true value of the rock by actual returns from the mill. The result obtained was only a trifle over \$96 per ton, which much disappointed us as the appearance of the ore indicated much larger returns.

From each bucket of ore, as it was taken from the battery, was saved a small sample for assay, while the mass of the rock was roasted for amalgamating. An accurate assay of these samples combined was made, giving \$235 per ton.

This loss of about \$139 per ton was caused by the presence of zinc in combination with other metals, which by our manner of roasting the ore was driven off, so as to carry this body of silver, or most of it with the zinc. This loss could have been easily saved, had we understood the true character of the ore; a knowledge which can only be obtained by similar practical tests, but when once understood renders these ores easy and simple in their reduction, the zinc not being a difficult metal to manage when once understood.

I have no hesitation in saying that the Big Smoky ore can be worked to within 20 per cent. of the fire assay without any difficulty, and I offered at the time to work a few hundred tons for them, guaranteeing to work to within 20 per cent. of the fire assay.

Had not the Company then decided to secure the building of a mill for themselves on their mine, they could have taken their ores to Austin for reduction at a large profit, and have secured thereby a mill from those profits, and in about the same time that they will do by securing capital to do it for them; and without losing a large portion of a valuable property.

The ores from your mine are of a very solid character, and the mineral is very evenly distributed, and I would recommend carefully roasting them always, and when once thoroughly understood by your Superintendent, the results must be satisfactory.

I should consider that with a 20 stamp mill well constructed, and the mill and mine well managed by practical and energetic men, that the estimates made in your report were below the actual facts to be realized.

The ores are there in large quantities and they are undoubtedly rich, but care and good judgment combined with energy are necessary for successful results like all valuable enterprises, the greater their magnitude and value, the more caution required.

But while I think the average yield of the ores will much exceed the estimates you have made, I think the cost of working them for at least two years yet, will be about \$30 per ton, on account of the very high prices of labor there, as well as the heavy expense of roasting these particular ores, which will be necessary to their proper reduction.

Very respectfully yours,

JOHN S. MORRIS.

LETTER FROM EX-SHERIFF MOORE, OF NEVADA.

NEW YORK CITY, Feb. 19, 1866.

*To the Secretary of the Big Smoky Silver Mining Co., 71 Broadway, N. Y.:*

DEAR SIR—From our acquaintance for a number of years, it affords me pleasure to give your Company the benefit of any knowledge which I may have of this property; but I make no profession to deep science in geology or metallurgy, and have more confidence myself in the judgment of men who have been practically engaged in quartz mining for years, than in those who base their opinions upon theory and science. For sixteen years I have devoted my time exclusively to quartz mining, except the two terms of my service as sheriff in Nevada, and have universally found that the men in whose judgment I could place the most confidence, were men of this class.

I have known the Big Smoky Mine since its first discovery; and after the vein was opened by the present tunnel, I examined it carefully, obtaining many assays of the ore in the tunnel for my own satisfaction, and which ranged from



\$250 to \$700 per ton. Higher estimates might truthfully and safely be made of the yield of the ore per ton than you have made; and I think your Company will be agreeably disappointed in this respect.

The ores are of the "Antimonial Sulphuret" class so friable, and the water level will no doubt disclose masses of pure antimonial ore, streaks of which already appear several inches in thickness in the bottom of the tunnel, indicating the close proximity of water. Veins of this character of ore always increase in richness the deeper they are opened into water. I have taken large specimens of native silver ore from the vein in the tunnel. The Big Smoky Mine can easily be made as productive as any mine on the Pacific coast, and perhaps I may safely say, second to none, a fact which must impress itself upon the mind of any person who examines its favorable situation for deep mining and draining, the mammoth proportions of the vein, the ore in masses now in sight, the wood and water, and the ease of communication in all respects for a company's operations.

The working of the ore in the Butte Mill, as appears in Mr. Morris' statement may be relied upon. I have known him for many years as a successful and practical miner, and he is a gentleman of undoubted ability and integrity.

Most respectfully yours,

GORHAM H. MOORE.

#### REPORTS OF PROFESSORS PALMER AND VEATCH.

In investigating the merits of this mine, the Directors decided to obtain if possible the opinion of Mr. Walter W. Palmer, the former superintendent of the Ophir Mine at Virginia City, Nevada, and now a resident of San Francisco, a gentleman who stands among the first as authority upon mining, geological and mineralogical developments in the United States. And also of Dr. John A. Veatch, whose experience and ability upon the subject has always secured for him the confidence and esteem of the mining community at large. Mr. Palmer was especially requested by telegraph to San Francisco, to report to the Company his opinion of the mine, which was received. The full correspondence appears with his report to them.

## REPORT OF PROF. WALTER W. PALMER.

"SAN FRANCISCO, 24th Nov. 1865.

TO MOSES CHAMBERLAIN, Esq., New York :

Sir—I am in receipt of your telegram as follows :

NEW YORK, 22d Nov. 1865.

"TO WALTER W. PALMER, SAN FRANCISCO :

Send your report of the Smoky Valley Mine, Reese River, immediately by telegraph, and one report by mail.

MOSES CHAMBERLAIN."

SAN FRANCISCO, 23d. 1865.

"TO MOSES CHAMBERLAIN, New York :

Examined Smoky carefully, prospects remarkably good, promises to be one of the best mines in Nevada. Particulars by mail.

WALTER W. PALMER."

"*Particulars*—The Smoky ledge is situated near Geneva, in one of the canons cutting into the Toiyabe Range from Smoky Valley. Austin, the principal towns of Central Nevada, is in an opposite canon entering the range named Reese River Valley. The distance between the two towns across the ridge, will be about seven miles, but by the present road about fourteen miles.

The two valleys named run parallel for a distance of nearly two hundred miles, divided by the Toiyabe range which rises from two to three thousand feet above them, its base varying in width from twelve to twenty miles, courses nearly north and south, and Austin occupies nearly a central position and on the overland road.

The formation of Austin on the west, or Reese River side, is *granite*, that of Geneva on the east or Smoky Valley side, *slate*.

The Reese River veins are generally small and rich, those of the slate on the east side, or Smoky Valley, are very large and promise to be permanently abundant in their yield of ore.

"The Smoky ledge" appears to me to be one of the best of them, and has had a little work done upon it, both in the Smoky mine and in the Everett immediately east. The

course of it is nearly west, with a dip of  $45^{\circ}$  to the north, into the hill, considered by miners to be itself a recommendation for deep mining.

More work underground is required to enable me to give the width of the vein; at the surface it measures from 40 feet to 60 feet, without counting parallel branches, which are likely at no great depth to incorporate themselves with the main body, feed it and give it additional width.

I saw a very fair show of ore in the tunnel driven in from the south in the Smoky Co.'s ground, which tunnel cuts the vein about one hundred and forty feet below the croppings, and I also saw some good cropping shews in the Everett ground on the same vein. I have seldom seen so good a shew follow such a small amount of work. The Smoky Co. claim 1,400 feet of the choice ground. Every feature in and about this vein appears to me to justify its selection for the operations of a mining company.

With a mill, I think the mine will require very little further help to enable it to develope itself. The water power in the neighborhood of the claim can be often repeated over mills of ten stamps capacity; one should be erected at once, then mining recommenced and others, (perhaps steam mills) as they may be required, erected. I think that the first outlay should be in the erection of a mill, whether it shall be a steam mill or a water mill, a small mill or a large one is a matter of small importance; it is simply a tool to continue the development of a large mineral vein, and one which promises to be exceedingly valuable.

Respectfully submitted,

WALT. W. PALMER.

#### REPORT OF PROF. JOHN A. VEATCH.

GENTLEMEN: In answer to your inquiry relative to the Big Smoky Mine of Lander county, Nevada, I beg leave to state as follows:

The above lode is situated in the Smoky Valley mining district, in the Toiyabe mountain range. The village of Geneva lies within a few hundred feet of the lode, a fine stream of water known as Birch creek running between it and the mine. I was informed that one mile of this stream had been obtained for the use and benefit of the Company and mine.

The vein or lode is one of those heavy developments occasionally encountered in the State of Nevada, which has



astonished the world with the quantity and value of their ores, such for instance as the Comstock and Nevada Giant. The outcrop shows a breadth of upwards of 30 feet, its strike being north-easterly and south-westerly, and dip about 45° east.

A tunnel has cut the vein as I am informed from valid authority, at a depth of 148 feet below the surface, encountering vein matter 28 feet in thickness, with a "pay streak" ten feet wide. The tunnel was not completed at the time of my last visit to the mine, but has since pierced the ore channel, and the developments fully justify the promise manifested on the out-cropping. The erection of a mill of the capacity of 50 tons per day, would be justified at once by the quantity of ore in sight, and a calculation is easily made of the result of such an establishment. I know of no mine in the State of Nevada more conveniently situated for working. The precipitous character of the mountain immediately in front of the lode, will enable it to be reached at a depth of upwards of 500 feet, with a tunnel but a little over 1,000 feet in length. The road from Geneva to Austin is excellent, a distance of only 12 miles, connecting with the great daily overland mail stages and overland telegraph to San Francisco.

The character of the lode is a true fissure vein, as is proved by the "clay casing" on each side of the vein matter where cut by the tunnel. Its being a fissure vein gives confidence in its permanency and persistency in depth, such veins never having been exhausted. The elements of success are evidently combined in this mine and its surroundings, and only await capital and skill to bring its riches to the surface. It may be well to also speak of the quantity of ore obtainable from a channel 10 feet wide and 1400 feet in length, and of a height of 148 feet. The area would furnish nearly 200,000 tons, of the value of \$20,000,000, at \$100 per ton. I refrain from any geological observations or speculations, as the practical man is only interested in the one question, "Is the metal there?" If the metal exists, it matters not what the age of the formation, or what name science may have imparted.

Very respectfully yours,

JOHN A. VEATCH,

*Mining Engineer and Assayer, late of Austin, N.*

## CONCLUSION.

In presenting the foregoing facts relating to the Big Smoky Silver Mining Company's property, the Directors have endeavored to present a plain statement of the facts pertaining to it, which they have been able to obtain from reliable sources, together with the scientific reports of Professors Palmer and Veatch, both gentlemen of high standing and reputation, entitling them to the fullest confidence in their evidence and reports.

The report of Mr. Morris is worthy of a careful perusal, not only as an evidence of the future greatness of the mine, but in comparison with the previous statements made to the public.

With an abundant treasury, the Directors have the fullest confidence in making this property one among the great silver producing mines of Nevada.

The management of the mine and building of the mill will be entrusted to the hands of reliable and capable men, whose past success and experience in silver mining entitles them to the full confidence of the board. The evidence given of the truthfulness of the representations made, as well as the reputation of the parties interested, not only its managers but those who have become identified with its interests by investment, will commend themselves to the consideration of capitalists, that no fancy picture has been drawn or unwarranted estimates made, and that the enterprise will be vigorously prosecuted in good faith for the best interests of the stockholders.

The mine at the present time evidently shows but a limited amount of concentrated rich ores, compared with what will be seen by vigorous developments to greater depths (as is already proved by the development of valuable ores in large quantities in the Everett Co.'s portion of the vein previously mentioned), and after a sufficient number of drifts and galleries shall

have been opened, whereby an increasing force of workmen may be continually employed. Enough mineral however has already been disclosed in large quantities to fully warrant the highest hopes and confidence of its future increase in extent and richness, as well as to warrant the present operations of the Company; opinions also warranted by the fact of the continued increase in richness of the vein from its out-crop to its present point of development where pierced by its tunnel, the results of the working of which, appears in the statements already given.

Rarely has a vein of any magnitude been found at the present day, or either mentioned in history, where sufficient bodies of rich available ores are found upon the surface or out-crop of the lode, to make it at once remunerative; and still more rare have been the number of paying silver mines in the world, where some exceeding rich rock did not appear on its surface. Three points only, upon the great Comstock Lode at Virginia City, of great richness of ores were found, and only a few feet on either of them out of a full length of over 16,000 feet on the lode, yet these evidences, (to wit, in the Gold Hill, Gould & Curry, and Mexican, in the Ophir claim), led to the succeeding prosperity and productions of silver in Washoe, whose history is already well known. The simple fact of the presence of such rich rock in small quantities, compared with the large mass of ore in sight, led to the wild excitement in silver mining in 1860 in Nevada, and the supposition that all quartz veins would prove silver mines, induced speculation until actual development proved the incorrectness of the theory, and led to the collapse which soon followed.

This first choice of location upon the lode, the Big Smoky Co.'s portion of the vein, showing various stratas and pockets of immensely rich rock, reaching as high as \$10,000 per ton of choice samples, has always been an evidence to the community and those acquainted with it of its great value. Its present development,



has given the conclusive evidence of its enormous resources and established the fact of its value, which has opened the way for surrounding it with the aid of capital to make those resources at once available. Two years of hard toil and patient perseverance, has thus placed it among the giant interests of the State, which it so justly merits.

The melancholy fact cannot be denied that many worthless mines have been sold in the East for large amounts by dishonest and unprincipled persons, but this fact does not make good mines any less valuable, or in the least retard the sure and increasing flow of bullion from them. If the generations past, could, with their ignorance and in their simple and primitive manner of working, extract the fabulous amounts of silver, which they are shown to have produced by our extracts from authority universally acknowledged, and from mines no richer nor more extensive than many in our State, what can intelligence and enterprise, aided by our vastly improved machinery, and the present experience of our American people accomplish, when once they fully appreciate and vigorously prosecute the development of this, one of our most vital interests in the accumulation of wealth, not only to individuals but to us as a nation.

For further information upon the subject of silver mining, we submit a few extracts, giving general information of the improvements and progress of the Reese River mining section, the opinions of the leading men of Nevada as seen in Gov. Blaisdel's message, and a few statistics from history, of the past production of the precious metals. The geological evidences of the permanency and formation of true fissure lodes given, will be found a matter of interest in comparison with the Big Smoky mine.

#### PRODUCTION OF THE COMSTOCK MINES.

We present a statement of the production of some

of the principal mines situated upon the Comstock Lode of Nevada. Their great value for the last five years, as well as the millions paid to their stockholders in dividends, are facts well known to the public.

"YIELD OF THE WASHOE MINES.—The State of Nevada taxes mines and requires a quarterly statement of the yield. The following is a statement of the mines in Storey county (which includes Virginia and Gold Hill), for the quarter ending March 31st:

Company.	Tons.	Av. Yield.	Gross Val.
Bacon M. & Mg. Co.....	2,749	\$23 66	\$48,260 71
Belcher Mine.....	4,540 $\frac{1}{2}$	69 05	314,130 31
Crown Point.....	1,043	34 83	36,331 00
Confidence G. & S. M. Co.....	2,851	32 70	90,821 30
Bowers' Mine.....	1,300	47 50	61,750 00
Eclipse M. & Mg. Co.....	1,572	35 34	55,568 05
Challenge Mg. Co.....	1,526 $\frac{1}{2}$	33 94	51,799 44
Gould & Curry Co.....	9,041	52 78	477,183 98
Imperial Co.....	6,397	31 47	201,334 55
New York & Nevada Co.....	1,454	28 30	41,950 98
Ophir Co.....	2,265	25 48	57,712 20
Piute Co.....	2,493	30 49	76,027 85
Potosi.....	9,088	33 90	308,120 92
Savage Co.....	14,480	42 06	608,319 00
Uncle Sam Co.....	150	30 72	4,608 00
C. C. Stevenson & Co.....	336	24 78	8,349 72
Yellow Jacket M. Co.....	19,201	37 50	720,107 54
Mexican Co.....	60	300 00	18,012 00
Apple Co.....	330	28 00	9,240 00
Empire Co.....	3,412	34 94	119,208 49
Chollar Co.....	11,000	40 00	440,000 00
Total tons.....	95,396	Value....	\$3,748,835 14
Average value per ton.....			\$39 34"

The natural enquiry arises from these comparisons of Reese River and Comstock ores, how can mines producing such low-priced ores pay the large dividends so long paid by them; as for instance, (in round numbers in bullion per foot) Gould & Curry Co., \$3,000, Ophir Co, \$3,000, Empire Co., \$18,000, Savage, \$10,000, some company's less and some larger amounts, even as high as \$1,000 per foot per month, and from the average yield presented above; and none excepting from the Ophir Co., have been free from assessments in their developments. The simple reason is,



the large quantities of rock extracted, and the cheapness of their reduction.

The expenses of working the ores from these mines have been reduced from \$35 to \$14 per ton; caused by the competition of mills, the present reduced prices of supplies of all kinds, and also the saving of the expenses of roasting the ores, in consequence of the great depth from which they are now obtained.

The actual charges of a mill company at Austin for working rock in large quantities, has until recently, been \$60 per ton, at present offers are made at \$45. If then, the Comstock ores can pay these dividends, what must be the relative production and worth to its stockholders of a mine fully equal in size, and producing ores so much superior in richness, and when the expenses of their reduction shall be proportionately lessened.

REESE RIVER REVILLE.—“The city of Austin contains nearly 10,000 inhabitants, is in the Reese River District, and its main street is the overland mail road. Daily the stage passes to and fro with the mails from New York to San Francisco, and the telegraph wires give us news at all hours from every accessible point on the globe. The discovery of mines caused thousands to visit us, towns were built, mills erected, and at this early day, under all the difficulties of a want of capital to develop this immensely rich country, we are now exporting monthly the amount of \$150,000 in silver.”

MINING UNDER VIRGINIA CITY.—“As an evidence of the steady increase in the production of silver in Nevada, we submit the statistics of the quarterly report ending August 1st, 1865, of the amount produced within the city limits of Virginia City. These statistics are obtained from the city assessment roll, amounting in round numbers to \$7,168,000, giving to this small space alone the sum of \$28,672,000 per year in silver bullion.”

COMMERCIAL LIST, N. Y.—“General attention has been attracted to the development of the lodes of silver ores discovered in Nevada, on the eastern slope of the Sierra Nevada

mountains. The wealth of this region is almost beyond estimate, and the receipts of some of the mining companies put the richest of our oil wells to blush. As an example, the Gould & Curry Mining Company of Nevada, mined during the year included from December 1863, to December 1864, 65,000 tons of ore, which realized the modest sum of \$4,898,000. The Ophir, Savage, Empire and many other companies in the silver region have met with like success, and the astonishing mineral wealth of Nevada has induced the formation of many new companies, several of which have been organized lately in this city."

The "MINING NEWS" of San Francisco, says:—"The Empire Mill and Mining Company which has paid to its owners up to November 30th, 1864, dividends in coin amounting to \$1,043,720, effected these results solely from their own labor, and without advancing a dollar of capital. Another silver mine of Nevada realized a profit of \$1,500 per day on an outly of cash under \$80,000, as follows :

15 tons of ore per day, at \$125 per ton.....	\$1,875
Deduct cost of milling, extracting and hauling to mill .....	375
Net profit in coin per day .....	1,500
Per month of 26 days .....	39,000
Per annum of 300 working days .....	450,000

The State of Nevada, with a population of 40,000 inhabitants or less, took out of her mines in gold and silver bullion during the year 1864, as is shown by the statistics of exports, more than \$30,000,000.

VIRGINIA DAILY UNION.—"From the mines in the vicinity of Virginia City, (Nevada,) within a tract of not more than 25 square miles, there has been shipped within the last twelve months some \$20,000,000 worth of silver, and this from a few of the principal mines. The next year will more than double this sum, and within five years it is certain that the annual yield will be over \$100,000,000, for unlike the gold mines of California, silver lodes are inexhaustible, growing richer as they descend into the bowels of the earth. The actual cash value of the mines in the vicinity of this city, the price for which they could be sold in a country where gold is the standard of value, where common labor commands from 4 to 5 dollars a day, is not less than \$100,000,000. The Gould & Curry, Ophir, Chollar, Potosi,

Hale & Norcross, California, Central, Mexican, Yellow Jacket, Belcher and Crown Point Company's, contain in all not quite 11,000 feet. In segregated claims in Gold Hill and vicinity there is not less than 5,000 feet, ranging from \$500 to \$20,000 per foot, and worth in the aggregate fully \$15,000,000. We have endeavored to give a fair and reasonable estimate of the value of mining interests alone. And there is still room here and at Reese Rivers, and Humboldt, for thousands of men who are willing to work for a few years for a fortune, that a life-time of toil would not bring in any other portion of the republic."

#### GOVERNOR BLAISDEL ON MINING.

Governor Blaisdel, in his recent message to the Nevada Legislature, says :

"Silver mining to us, five years ago, was entirely new ; and it is not to be wondered at that we should make serious mistakes, both in mining and in the construction of works for the reduction of ores, and the economical management of everything connected therewith ; but with our experience, the future in this respect, should be comparatively safe. Mining is, and long will be our paramount interest. It is a well established fact that exceedingly rich veins of minerals exist in almost every portion of the State ; and valuable discoveries are constantly being made. In many new localities ores are found which will pay \$40 and upward per ton, but are not being worked with much profit, owing to the lack of capital to erect machinery for their vigorous development and reduction, but this obstacle is being rapidly overcome. Many men of extensive means, during the last few months have been giving attention to the new districts, and are preparing for the opening of these mines, and the erection of extensive works next summer. When the true value of our mines is more thoroughly known abroad, which must be during the next year or two, I have no hesitation in saying that abundance of capital will seek investment within our borders ; and where now we contribute thousands to the metallic currency of the world, we shall produce tens of thousands. And when the great Pacific Railroad is completed across our State, many mines that are now considered of but little worth, will be worked with much profit. It is not only in the precious metals our State abounds, for copper, lead, iron, sulphur, alum, borax, salt



and soda, are found in great abundance, but at present are considered comparatively valueless; but with the facilities for transportation which we have good reason to hope for within a few years, many of these baser minerals will be a source of great wealth.

**THE INEXHAUSTIBILITY OF TRUE FISSURE LODES.**—One of the most important lessons of mining experience, taught by all the principal authorities is, that the true fissure lodes are continuous geologically and inexhaustible practically, although a point may be reached where the extraction of ore ceases to be profitable, from its immense depth. A true vein, according to Prof. Whitney, is a fissure in the solid crust of the earth of indefinite length or depth, which is filled more or less perfectly with mineral substances; or in other words an aggregation of mineral matter, accompanied by metalliferous ores, within a crevice or fissure which had its origin in some deep-seated cause, and may be presumed to extend for an indefinite distance downwards. According to the theory accepted by geologists generally, the fissure was made by some internal convulsion, and while it stood open it was filled up with the veinstone, the ores coming in vapors from the intensely hot regions below, and crystallizing or condensing in the vein. The theory implied continuity in the vein and inexhaustibility in the mineral. The fissure veins always have a veinstone differing in geological character from the wall, which are usually distinctly marked. Thickness of lode, steepness of dip, distinctness and hardness of wall-rock, difference in character of the two walls, difference in character of wall at different parts of the vein, occurrence of horses similar in geological character to the hanging-wall, and clay seams that appear to have been formed by the grinding of the veinstone against the walls, are all important evidences of a true fissure vein.

All the great silver lodes now producing any considerable amount of metal, are considered to be true fissure veins. The mines at Cerro Pasco, in Peru, have been worked since 1643, yielding \$450,000,000, and are still productive. The Potosi mines, opened in 1545, have contributed \$1,000,000,000 to commerce, and are not yet exhausted. The mines of Guanajuato and Zacatecas have been worked about three centuries, and together they have yielded more silver than Potosi, and they are still among the most productive of the world. Alamos, in Sonora, has been an important silver mining district for two hundred years. The mine of Gaudaloupe, in Calvo, in Chihuahua, though it has been worked thirty years,

yielding in some years as much as \$1,000,000, is not yet abandoned. The mines of Sombrerete, discovered in 1670, were worked with great profit, one of them yielding \$20,000 per day for five years, until 1698, when they were closed by a law suit, and then rendered inaccessible by the accumulation of water. Thus they remained for nearly one hundred years, until a bold man came along, re-opened them, and took out in a few years \$13,000,000, and the mines are still considered to be rich. Santa Eulalia, in Chihuahua, was worked for eighty years, and was then abandoned, not because of exhaustion, but on account of the hostility of the Indians. Chanarcillo, in Chili, has yielded about \$2,000,000 annually, for more than thirty years, and no one anticipates any interruption of its productiveness in our time. Real del Monte is rich to-day, though it has been prominent for its production of silver since the middle of the sixteenth century, with no interruptions save those caused by the want of water and drain tunnels. The silver mines of Hanover and Saxony are not exhausted, though they have been worked since the middle ages. Nine-tenths of the silver yield of Spanish America and Europe comes from veins that were opened more than two hundred years ago, and have been profitable ever since. Not one of them has the features of continuity more strongly marked than the Comstock lode, and few of them promise to yield more silver. Some are wider, others have been traced farther, and others have richer ore, but no other has produced \$35,000,000 within three years, or has been worked with so much energy, or offers such facilities for deep draining, ventilation, and the extraction of the ore.—*Alta Cal.*

The weekly circular of the San Francisco Stock and Exchange Board of July 16, present the following statistics of the product of the various silver mines:

“The receipts in this city, of uncoined gold and silver from California and Nevada since January 1st (6½ months), amounted to \$21,500,000, showing an excess of \$2,500,000 as compared with a like period of last year, when the Placer mines were yielding more abundantly. These figures clearly indicate the increasing importance and value of the Washoe mines, and we doubt whether any other interest on this coast can now present such attractions to those who may invest at present prices. No business is likely to give more

assured profits, if regularly and legitimately pursued. The most important gold and silver regions of this continent, and perhaps of the world, are those of California and Nevada. Their development has multiplied the production of the precious metals every where else, and our metallic scorings upon the tablet of the future are never to be erased. It may be of some interest to speak in this connection, of the productions of gold and silver in other portions of the great chain, extending north through South America, Central America, and Mexico. The principal mineral wealth of the world has been found in the mountain region which overlooks the Pacific ocean. For three hundred years the Spaniards in Mexico, Peru, and other South American Colonies have been extracting silver and gold from the veins of the metamorphic rocks. From the year 1550 to 1790, Humboldt estimates their production to have been \$5,000,000,000, and from 1790 to 1830, \$910,000,000 is the estimated yield, of which latter sum Mexico alone produced \$708,000,000 in silver. The great mine at Potosi, formerly in Peru but now in Buenos Ayres, has been worked since 1845, and Ure estimates the entire yield of the veins around this mine to have been \$1,500,000,000. We thus see what has been accomplished in the southern portion of the same range, which doubtless runs through this State and Nevada, and where mines have been worked in the rudest manner. With us all the resources of modern science will be taxed to find out the best way of working, cheaply and thoroughly, the ores that are found, and many new processes will be discovered from time to time."

"The presence of silver in immense masses is a peculiarity of Nevada, and will prove in the course of time more beneficial to her and to the country than the deposits of gold. The hills and mountains are full of it, and frequently both gold and silver are found in such localities mixed together. The powers of production of silver mines may be estimated by the following statistics, taken from the history of silver mining in Mexico :

The San Dimas mine, in Durango, yielded over \$1,000,000 a year, for 25 years.

The Zavello mine yielded over \$20,000,000 a year.

The Pavillion mine yielded over \$20,000 a day, giving to its shareholders over \$6,000,000 annually.

The Sombrerete mine yielded in about seven months, some 25 years ago, a clean profit to its shareholders of \$5,000,000.

At Zacatecas there is hardly a mine which has not had a rich yield of silver of some millions.



One mine alone at Avaseo, gave to its shareholders in a few years, \$45,000,000.

The Galego mine in the years 1829 to 1835, gave \$11,000,000 to its shareholders.

The mines in Nevada are situated in the same mountain range as those of Mexico, which belt the continent from the frozen seas to the Isthmus of Panama. And they are no less rich than the most productive of Mexico."





















